WHAT IS CLAIMED IS:

1. A system for host-based QoS privisioning, comprising:

a host system connecting to a network, said host system initiating data flows that are sent to said network; and

a centralized QoS privisioning mechanism for enforcing flow control applied on said data flows originated from said host system, said centralized QoS provisioning mechanism connecting to said host system.

2. The system according to claim 1, wherein said host system comprises:

a server; and

at least one client capable of communicating with said server.

3. The system according to claim 2, wherein said centralized QoS provisioning mechanism comprises:

at least one network traffic control agent that are responsible for enforcing said flow control, each of said at least one network traffic control agent running on one of said at least one client, imposing said flow control on data flows initiated by applications runing on said one of said at least one client;

a network traffic control administrator, running on said server, for conducting centralized QoS provisioning and for performing said centralized QoS provisioning by enforcing flow control via said at least one network traffic control agent; and

a policy server for storing said QoS provisioning policy.

4. The system according to claim 3, further comprising:

a console for performing user-level QoS provisioning; and

a network performance statistics collector for collecting network performance statistics from said host system, said network performance statistics being utilized by said network traffic control administrator to perform automatic feedback-driven QoS provisioning policy adaptation.

5. A system for a network traffic control agent, comprising:

a communication unit for interacting with a network traffic control administrator wherein said network traffic control administrator is running on a server in a host system comprising said server and at least one client;

a filtering unit for filtering an application based on a filter received from said network traffic control administrator via said communication unit, said application running on one of said at least one client in said host system, said network traffic control agent running on said one of said at least one client; and

a flow control enforcement unit for enforcing flow control on data flows generated by said application according to a flow specification received from said network traffic control administrator via said communication unit.

6. The system according to claim 5, further comprising:

a storage for storing said flow specification received from said network traffic control administrator; and

a flow monitoring unit for collecting per flow information from said data flows of said application and sending said per flow information to said network traffic control administrator via said communication unit.

7. A system for a network traffic control administrator, comprising:

a communication unit for communicating with at least one network traffic control agent;

a per-flow usage analysis unit for analyzing per-flow information collected by said at least one network traffic control agent and received via said communication unit, to generate per-flow usage statistics;

a local network usage information analysis unit for analyzing the network performance statistics to generate local network usage statistics;

a QoS provisioning unit for conducting centralized QoS provisioning to generate QoS provisioning policy and for updating said QoS provisioning policy based on said per-flow usage statistics and said local network usage statistics; and

a flow control instruction unit for constructing a filter and a flow specification based on said QoS provisioning policy, said filter and said flow specification being sent, via said communication unit, to said at least one network traffic control agent to enforce flow control; and

a QoS provisioning policy updating unit for updating QoS provisioning policies.

8. The system according to claim 7, wherein said QoS provisioning policy updating unit comprises:

a manual user-driven updating unit for performing manual update of said QoS provisioning policy to generate updated QoS policy;

an automatic feedback-driven adaptation unit for dynamically adjusting said QoS provisioning policy based on said local network usage statistics and said per-flow usage statistics to generate updated QoS policy; and

a flow control instruction unit for constructing updated flow specifications based on said updated QoS policy.

9. A method for host-based QoS provisioning, comprising:

performing, by a network traffic control administrator, centralized QoS provisioning for an application to generate QoS provisioning policy, stored on a policy server, said application running in a host system;

constructing, by said network traffic control administrator, a filter and a flow specification according to said QoS provisiong policy, said filter and said flow specification being used to enforce flow control on data flows initiated from said application;

sending said filter and said flow specification to a network traffic control agent;

receiving, by said network traffic control agent, said filter and said flow specification;

filtering, by said network traffic control agent, said application using said filter; and

enforcing said flow control, based on said flow specification, on said data flows of said application.

10. The method according to claim 9, further comprising:

activating, by said network traffic control administrator, a QoS provisioning policy updating unit;

examining statistics relevant to the operational status of said host system;

generating an updated QoS provisioning policy based on said statistics, said updated QoS provisioning policy being stored in said policy server;

constructing an updated flow specification according to said updated QoS provisioning policy; and

sending said updated flow specification to said network traffic control agent.

11. The method according to claim 10, wherein said statistics includes at least one of:

per-flow usage statistics derived based on per flow information collected by at least one network traffic control agent; and

local network usage statistics derived based on network performance statistics collected by a network performance statistics collector.

12. A method for a network traffic control agent, comprising:

receiving a filter and a flow specification from a network traffic control administrator, said filter and said flow specification being associated with an application;

filtering said application running on a client on which said network traffic control agent resides, said application initiating data flows;

retrieving a flow specification associated with said application; and

enforcing flow control on said data flows based on said flow specification.

13. The method according to claim 12, further comprising:

receiving information collection instruction from said network traffic control administrator;

monitoring said data flows initiated from said application to collect per-flow information specified in said information collection instruction; and

sending said per-flow information to said network traffic control administrator.

14. A method for a network traffic control administrator, comprising:

receiving a request for centralized QoS provisioning associated with an application, said application being installed on a client where a network traffic control agent resides;

receiving a user-level provisioning specification corresponding to QoS provisioning policy associated with said application; and

storing said QoS provisioning policy associated with said application in a policy server;

constructing a filter associated with said application;

constructing a flow specification corresponding to said QoS provisioning policy associated with said application; and

sending said filter and said flow specification to said network traffic control agent.

15. The method according to claim 14, further comprising:

receiving per-flow information from at least one network traffic control agent;

generating per-flow usage statistics by analyzing said per-flow information received from said at least one network traffic control agent;

receiving network performance statistics from a network performance statistics collector; and

generating local network usage statistics by analyzing said network performance statistics received from said network performance statistics collector.

16. The method according to claim 15, further comprising updating QoS provisioning policy.

17. The method according to claim 16, wherein said updating comprises:

determining whether said updating is to be performed in manual user-driven mode or in automatic feedback-driven mode;

performing manual user-driven QoS provisioning policy updating if said updating is to be performed in said manul user-driven mode, determined by said determining; and

performing automatic feedback-driven QoS provisioning policy adaptation if said updating is to be performed in said automatic feedback-driven mode, determined by said determining.

18.The method according to claim 17, wherein said performing manual user-driven QoS provisioning policy updating comprises:

examining said per-flow usage statistics and said local network usage statistics;

determining policy update measures based on said per-flow usage statistics and said local network usage statistics; and

revising said QoS provisioning policy stored in said policy server according to said policy update measures.

19. The method according to claim 17, wherein said performing automatic feedback-driven QoS provisioning policy adaptation comprises:

forking into a plurality of cycles, said automatic feedback-driven QoS provisioning adaptation is performed in each of said plurality of cycles based on a different cycle length;

examining, in each of said plurality of cycles, said per flow usage statistics and said local network usage statistics;

computing automatically, in each of said plurality of cycles, adaptation measures to be applied to said QoS provisioning policy based on said per flow usage statistics and said local network usage statistics;

revising, in each of said plurality of cycles, said QoS provisioning policy stored in said policy server according to said adaptation measures.

20. A computer-readable medium encoded with a program for host-based QoS provisioning, said program comprising:

performing, by a network traffic control administrator, centralized QoS provisioning for an application to generate QoS provisioning policy, stored on a policy server, said application running in a host system;

constructing, by said network traffic control administrator, a filter and a flow specification according to said QoS provisiong policy, said filter and said flow specification being used to enforce flow control on data flows initiated from said application;

sending said filter and said flow specification to a network traffic control agent;

receiving, by said network traffic control agent, said filter and said flow specification;

filtering, by said network traffic control agent, said application using said filter; and

enforcing said flow control, based on said flow specification, on said data flows of said application.

21. The medium according to claim 20, said program further comprising:

activating, by said network traffic control administrator, a QoS provisioning policy updating unit;

examining statistics relevant to the operational status of said host system;

generating an updated QoS provisioning policy based on said statistics, said updated QoS provisioning policy being stored in said policy server;

constructing an updated flow specification according to said updated QoS provisioning policy; and

sending said updated flow specification to said network traffic control agent.

22. A computer-readable medium encoded with a program for a network traffic control agent, said program comprising:

receiving a filter and a flow specification from a network traffic control administrator, said filter and said flow specification being associated with an application;

filtering said application running on a client on which said network traffic control agent resides, said application initiating data flows;

retrieving a flow specification associated with said application; and

enforcing flow control on said data flows based on said flow specification.

23. The medium according to claim 22, said program further comprising:

receiving information collection instruction from said network traffic control administrator;

monitoring said data flows initiated from said application to collect per-flow information specified in said information collection instruction; and

sending said per-flow information to said network traffic control administrator.

24. A computer-readable medium encoded with a program for a network traffic control administrator, said program comprising:

receiving a request for centralized QoS provisioning associated with an application, said application being installed on a client where a network traffic control agent resides;

receiving a user-level provisioning specification corresponding to QoS provisioning policy associated with said application; and

storing said QoS provisioning policy associated with said application in a policy server;

constructing a filter associated with said application;

constructing a flow specification corresponding to said QoS provisioning policy associated with said application; and

sending said filter and said flow specification to said network traffic control agent.

25. The medium according to claim 24, said program further comprising:

receiving per-flow information from at least one network traffic control agent;

generating per-flow usage statistics by analyzing said per-flow information received from said at least one network traffic control agent;

receiving network performance statistics from a network performance statistics collector; and

generating local network usage statistics by analyzing said network performance statistics received from said network performance statistics collector.

26. The medium according to claim 25, said program further comprising updating QoS provisioning policy.

27. The medium according to claim 26, wherein said updating comprises:

determining whether said updating is to be performed in manual user-driven mode or in automatic feedback-driven mode;

performing manual user-driven QoS provisioning policy updating if said updating is to be performed in said manual, user-driven mode, determined by said determining; and

performing automatic feedback-driven QoS provisioning policy adaptation if said updating is to be performed in said automatic feedback-driven mode, determined by said determining.

28. The medium according to claim 27, wherein said performing manual user-driven QoS provisioning policy updating comprises:

examining said per-flow usage statistics and said local network usage statistics;

determining policy update measures based on said per-flow usage statistics and said local network usage statistics; and

revising said QoS provisioning policy stored in said policy server according to said policy update measures.

29. The medium according to claim 27, wherein said performing automatic feedback-driven QoS provisioning policy adaptation comprises:

forking into a plurality of cycles, said automatic feedback-driven QoS provisioning adaptation is performed in each of said plurality of cycles based on a different cycle length;

examining, in each of said plurality of cycles, said per flow usage statistics and said local network usage statistics;

computing automatically, in each of said plurality of cycles, adaptation measures to be applied to said QoS provisioning policy based on said per flow usage statistics and said local network usage statistics;

revising, in each of said plurality of cycles, said QoS provisioning policy stored in said policy server according to said adaptation measures.